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## THE ADMINISTRATION OF THE NATIONAL FORESTS.

We have been hearing a great deal of late about the preservation of our forests. Last May President Roosevelt held a convention of governors at Washington to consider how the national resources of the United States, her public lands, forests, minerals and water, might be more wisely used and more fully conserved for coming generations. Every few days, the papers report some new step toward the adoption of this idea of conservation as a broad national policy. Over in Helena, one state legislature is wrestling with the problem of how the state's timber lands can be most wisely administered as a permanent resource. A few days ago I attended a meeting in Spokane of some dozen lumbermen from all parts of the Pacific Northwest. These men had left their busy offices for three or four days to discuss how they might more effectively protect from fire not only their timberlands, but also the cut over areas where a new growth of trees is just starting.

These few incidents simply illustrate what is happening all over the United States. The American people are beginning to look upon their public lands, their forests, their mines, in a different light than

they have done heretofore. The average citizen is beginning to realize that these resources are neither boundless nor inexhaustible as we have so often boasted, but on the contrary that their speedy exhaustion can be prevented only by care and foresight in our present use of them.

The policy of the government in the creation and administration of the National Forests is a clear expression of this change in public opinion. It is the longest step which the nation has yet taken towards care and foresight in the use of its natural resources. In a word, it is a concrete example of what these high sounding theories about conservation really mean when applied to a definite proposition.

I will try to explain first just what the National Forests are, and the interest which everyone of us has in their care; in the second place, I want to show that while it is not possible now, in many cases, for the private owner of timber land to practice what we call forestry, it is absolutely necessary for the government to do so in its management of the National timber lands. And then I want to give you such idea as I can of what is actually being done by Uncle Sam's men on our National Forests.

The National Forests have been created by reserving areas of forested land belonging to the government from settlement. As you doubtless know, nearly all the land in the United States outside of the thirteen Colonies, belonged originally to the Government, constituting a great public domain. Under the various land laws, such as the Homestead Act, the Timber and Stone Act, and the mineral laws, this vast area, extending westward from the Ohio valley, has been opened to settlement and has passed steadily into the ownership of private citizens. In 1891, however, Congress passed a law which authorized the President to reserve from settlement areas on the public domain which are chiefly valuable for their forests rather than for agriculture.

Under this act the Presidents have withdrawn from settlement enormous areas of timbered land covering practically all of the principal mountain ranges

in the West. To-day the area of the National Forests exceeds a hundred and sixty million acres. In our own State of Montana alone there are over twenty million acres included in the National Forests, and here in Missoula we are completely surrounded by them.

The significance of the National Forest policy is that this enormous area of timbered land, reaching the billions of dollars in value, has been set aside as the property of the people of the United States, a property to be kept permanently in public ownership and administered by the Government in the interests of the people at large, in exactly the same way that the business of a corporation is administered by its directors or its manager in the interests of the stockholders. It is as though the people of the United States had formed a National timber company, with eighty-five million shares, a share in the company being the birth-right of every citizen. The administration of the property represented by the National Forests should therefore be of vital interest to every one of us because we are all joint owners of this property.

In the administration of this great timbered area which belongs to the people, the Government believes that the present and future interests of the greatest number of the shareholders in the business will be benefited by the adoption of forestry methods. I take it that you all understand that forestry as a broad term includes every

method of logging wood land under which some adequate provision is made for a new growth of trees on the land cut over, and in time a new supply of timber for commercial use. Forestry is therefore simply a specialized form of lumbering. The essential difference between forestry and the methods of lumbering commonly employed in this country is that the lumberman who practices forestry cannot get as large a direct return from his business as the lumberman who does not. In order to put his business upon a permanent basis, the former must sacrifice a part of the profit which the latter adds directly to his bank account. The immediate outlay of a portion of the proceeds of the business is necessary, for the timber owner who practices forestry, in order to insure a new growth of trees and a future supply of timber on his land. This outlay may be made in any one of many ways. Under very favorable conditions it may be necessary simply to protect the land that has been cut over from fire and a new growth of trees will naturally establish itself. This is true of many of the pine and fir forests of Montana. In this case the outlay of money is represented by the cost of protecting the land and of paying taxes on it year after year until the new growth of trees is of sufficient size to be cut; or the outlay may be in the form of leaving on the ground a number of trees for the purpose of seeding up the area after the woodchoppers

leave it. The timber which is so left represents a present market value, say, of ten or fifteen dollars an acre, which is tied up in the land rather than turned immediately into hard cash. Or the outlay, under some of the more advanced methods practiced in European countries, may take the form of planting the land which has been cut over artificially with young trees. In this case although the entire value of the present stand of timber is realized, an investment of several dollars an acre must be made immediately in order to place the land again in such condition that it will be producing a future timber supply. The result of this outlay or investment will be in many cases not only a new but a far more valuable growth of timber than that which originally covered the land. By cutting out the right trees or by planting better varieties than those native to the ground the forester can usually increase both the amount and value of the new stand of timber as compared with the original stand. The essential point is, however, that the lumberman who practices forestry must in one form or another sacrifice a part of the immediate profit in his business in order to provide for its future continuance which his neighbor who does not practice forestry can put in his pocket or add to the dividends of his stockholders.

Forestry thus puts the lumbering business upon an entirely different basis. The immediate returns

are less. The capital required is greater. Instead of a quick return of the capital, through buying timberland and converting it almost immediately into cash, the investment becomes permanent, like an investment in a city office block. Under forestry methods, lumbering ceases to be a transient industry, stripping a region of its timber and then moving on to fresh locations; it becomes an established business so planned and organized that instead of being one of the most temporary and changeable of industries, it becomes one of the most permanent.

Forestry is thus one of the more specialized forms of business, like the architecture of the city sky scraper or a present-day railroad system, which are worked out at a comparatively late period in the economic development of any country. It is the change which can be traced in almost every line of business, in response to new economic conditions, toward a greater investment of capital, specialized methods, and a far more systematic and permanent organization of the business.

Under present economic conditions in the western states, few of the lumbermen and private timberland owners can practice forestry. The supply of virgin timber is still so great, so much of the material in the trees which are cut must be wasted through inability to sell the cheaper grades of lumber, the market price of lumber is still so low - that the hard headed man of

business cannot yet see his way clear to invest a portion of his profits in the land which he has cut over and wait thirty years or more before he will realize anything from the investment.

In Germany, for example, the price of rough lumber at the sawmill is not less than \$150 per thousand feet as compared with \$15 or \$18 in Montana. The German lumberman can sell practically every cubic inch of wood in the trees which he cuts, even binding the little twigs into faggots and selling them for fuel and disposing of the very leaves in some cases for fertilizers and other purposes. The Montana lumberman, on the other hand, is still forced as a rule to leave a fourth or a third of every tree in the woods to rot, simply because he cannot sell it. The German lumberman regards his timber as a crop with a value representing the actual cost of producing it during the long years which the seedlings are becoming saplings and the saplings are growing into the stature of the mature trees. In Montana, we take our timber as the gift of nature, accumulated through centuries of growth in the primeval forests. We harvest it as a farmer might harvest a crop of wheat from grain grown wild on the prairies. It has cost us nothing to grow it; and the value which we place upon it is insignificant, bearing no relation to the actual cost of producing the timber through the slow process of growth.



Under present economic conditions in the West, the lumberman cannot in many cases escape the cold logic of compound interest, that the ten or twelve dollars an acre which he must in one form or another invest in his cutover land in order to make sure of a new growth of trees, might, if deposited in a bank or invested in a manufacturing enterprise yield a greater revenue in the same length of time. The professional forester, therefore, has no quarrel with the lumberman, for the lumberman in the great majority of cases is doing exactly what the Forester would do if he were in the lumberman's shoes. I have no sympathy with the condemnations of American lumbermen which are frequently heard, as ruthless destroyers of the forest wealth of the country in blind disregard both of their own interests and of the interests of the nation. As a matter of fact, America is two centuries behind Germany or France in this phase of economic development. American lumbermen are simply working out this question in accordance with existing economic conditions just as the Germans did before them. And as economic conditions justify the substitution of forestry methods as a specialized form of lumbering, we will find the American lumbermen developing a forestry of their own with the same energy and business foresight which they have shown in the conduct of business affairs of every character. The conditions surrounding the lumbering business are

now rapidly changing, due to the diminishing supply of virgin timber and the increasing value of all forest products; and I believe that the time is not distant when conservative business men will see clearly that the investment of a few dollars an acre in cut-over timberlands, through the adoption of forestry, is certain to be a paying one. For the present, however, many, though not all, of the private timberland owners and lumbermen cannot practice forestry.

Why is it then that the Government, as the board of directors of the greatest land and timber company in the world, namely, the people of the United States who own the National Forests, has decided that in the administration of its holdings forestry methods should be followed? I will give briefly the two most important reasons. The first is the vital relationship which exists between the forests in the higher mountains and an even flow of water in the streams which run from the mountains down into the thickly settled valleys. Centuries ago the Arabs framed the proverb that "the Forest is the father of the fountain." And the searching investigations of modern days have shown conclusively that cutting off the forests on the headwaters of our rivers inevitably results in the irregular flow of streams, alternating between floods and droughts, and the filling of river channels with soil washed down from the unprotected hillsides. Now many shareholders in our great National company, all through the

West, are vitally concerned with the perpetuation of the water supply for the irrigation of their farms. A great many other shareholders are concerned with the perpetuation of an ample and uniform water supply for the development of electric power with which to run railroads and factories and light cities. Many other shareholders still are vitally interested in the maintenance of a uniform and steady flow in our principal rivers in order that they may remain navigable and that their use for purposes of transportation may be widely extended in the future rather than decreased. We right here are on the great watershed of the Columbia river. Many of you doubtless know of the movement to make the Columbia and its tributaries navigable for greater distances and to farther inland points than has yet been possible. You doubtless realize the importance of this movement as a part of the development of this great inland empire along every conceivable line. But the future navigability of the Columbia depends even more vitally upon what is done up here in the mountains of western Montana than upon the important dredging and other engineering work which is now proposed. Because so many of its stock-holders are so vitally concerned with the perpetuation of the water supply for all of these purposes, the Federal Government as the board of directors of the National Timber Company believes that the National Forests should be so administered that the flow in every little mountain stream shall be made as permanent and

equable as possible. Therefore, say the directors of the National Timber Company, no trees shall be cut except where and under such conditions that a new growth can be speedily secured.

The second reason why the directors of this great timber company believe that they should practice forestry, even though it means a loss in the present returns, is, that these same directors, being far-sighted men, see very clearly that a time is coming in fifteen or twenty years when their shareholders will need timber much more than they do now, and will find it infinitely harder to get. The United States is now cutting and using about one hundred billion feet of timber every year. The highest estimate which has been made of all the timber remaining in the country is two thousand billion feet. You can very easily divide one hundred into two thousand and see in how many years our supply of timber will be exhausted. If we make a generous allowance for the wood which is produced every year by the growth of trees, it still seems inevitable that thirty or thirty-five years will witness the complete exhaustion of the timber supply in the United States. The Forest Service looks forward to the future needs of the shareholders in these great national timber holdings, and believes that it is wise to sacrifice, if need be, a portion of the present returns in order to insure a future supply of timber to meet as far as possible the

future needs of the country when other supplies are exhausted.

For these two reasons, then, first, the necessity of preserving the water supply in the West, and second, the necessity of preserving and as far as possible increasing the supply of timber for future needs in the country as a whole, the directors of the National Timber Company have adopted the policy of cutting timber only under methods, however simple, which will result in a new, and, if possible, a better forest growth.

So much for the reasons which have led to the adoption of this policy by the Forest Service. Let us now glance at some of the actual work which is being done by the employees of the Government. For administrative purposes, each National Forest, comprising an area of from one to two million acres, is taken as a unit. The officers on each Forest are as rapidly as possible making a systematic study of the timber on the area intrusted to their charge. The main points which this study on each Forest will bring out are three in number. First, the amount of timber in board feet or cords, the very thing which any lumberman would ascertain as soon as possible after acquiring a piece of land. The second point is the rate at which this timber is growing. How many board feet are being added each year to the total amount of timber on every acre? That is where we go a step farther than the usual owner of timber land. His interest stops when he

has found out how much he now has. Our work demands that we know also how much we are going to have in the future. Hence the growth, the actual amount of wood which is added year by year is the most essential fact to determine. The third point which every officer in charge of a National Forest must know before he is in a position to handle the property of the people intrusted to him is the condition of the timber on the various parts of his Forest. Where are the burned over areas on which the timber has all or nearly all, been killed by fire? Are there any canyons where beetles or other insects are destroying timber? On what parts of the Forest are the trees so old that they have quit growing and are beginning to decay, and on what parts of the forest is the timber young, thrifty, growing rapidly?

And so, on foot in summer and on snow shoes in winter, the forest officers must work over their ranges, running surveys, estimating the timber, taking measurements, and so learning these essential things about the forest.

When we have ascertained these three things: the amount of standing timber, the rate at which it is growing, and the condition of the Forest in the various canyons and valleys, we are in a position to carry out intelligently the forestry policy which the directors of the National Timber Company believe is most wise in the interests of their share-holders. The results of such a study are usually about

like this. Here is a National Forest covering a million acres. It has a total stand of five billion feet of timber. It is producing every year fifty million feet simply from the natural increase in the size of the trees. Here in this Forest are such and such valleys where the trees have been killed by fire, and, of course, not growing at all, but are rapidly deteriorating in value. This timber should be cut just as soon as possible if its owners are to realize anything from it. Here are other valleys where the timber is old, as we would say "over-ripe", meaning that it has reached a point where it is growing very slowly, if at all, and where from decay and other natural causes it is in danger of dying or becoming worthless for lumber. This timber also should be cut in the near future if its owners, the people of the United States, are to realize any of its value. Here are certain other mountains and plateaus where the timber is young, growing rapidly, free from disease, and adding every year a large amount of wood to the actual stand on every acre. Such timber, obviously, should not be cut for many years until it reaches a point where its rapid growth ceases and it also begins to go down hill.

The deductions from these results, expressed on maps and in simple tables are obvious. On this particular Forest, we can cut fifty million feet every year without diminishing in the least the total supply. That fifty million feet represents simply the annual interest on the investment just as Fifty Dollars represents the annual dividends on a certain

number of shares of preferred stock. "Therefore", says the forester, "we will cut every year from this Forest, fifty million feet and our capital of five billion feet will remain undiminished for all time. We will cut the oldest timber first, giving the younger timber a chance meanwhile to grow. And so we will work over the entire forest, cutting 50 million feet every year; and when, many years hence, we shall have cut over it all, we can begin again at the starting point when a new growth of trees is ready for the ax, and cut the land over a second time. Our capital, our asset of five billion feet, is never diminished. We are simply taking off each year the growth, the interest."

The 50,000,000 feet which are cut each year should include the older trees, those which can no longer grow and add to the total volume of wood on the forest. Wherever such trees are cut some provision must be made for a new growth, either by leaving a large number of the younger trees, if they occur, to reseed the ground after the cutting is over as well as to add to their own volume before being converted into lumber; or by leaving solid blocks of forest untouched near enough together to reseed the land which is cut over; or, possibly, by replanting the ground which is cut over with seedlings grown in nurseries in order to make sure of a future forest. There is no work so interesting to the forester in Uncle Sam's employ as this of determining what trees shall be cut. He must go over and over the area, studying the individual trees and blazing the ones which



are to be removed, and making sure that enough are always left to produce another, and, if possible, a better forest growth.

The next question which confronts the forest officer is how shall this annual cut of fifty million feet, which can be taken out of the forest without reducing its capital, be distributed? Who shall have the benefit of it? On this question the board of directors of the National Timber Company have decided that the stockholders who live nearest to the Forest concerned and whose individual enterprises and pursuits are most directly dependent upon that Forest for their supplies of raw material should be given the preference in the distribution of the amount of timber cut annually. This means the settlers all through the west on and near the National Forests, the local towns and communities where lumber yards are needed to meet the demand for buildings; the mines scattered all over the west, which require timber for tunnels and shafts, and any local enterprises identified with the region in which the National Forest is located. The settlers are allowed to take annually, without charge, the timber required for their own use, as fuel, fencing and building material. Wherever the supply of timber is limited and the annual production correspondingly small, sufficient areas are set aside for free use by settlers to insure a supply for their needs in advance of every one else. Next to them, the local sawmills, which distribute lumber through the immediate region, mining companies, wood yards, irrigation plants,

and similar enterprises are provided for. These local consumers are given the preference in purchasing National Forest timber over all other applicants. If, after the settlers and the local enterprises have been provided for, any part of the annual cut of fifty million feet is left, it is sold wherever a demand exists to lumber companies supplying the general market and is distributed at large over the United States. And so in our illustration, let us assume that the free use by the settlers requires a million feet every year, and that another fifteen million feet are required to supply mines, nearby towns and local enterprises; we would then have a balance of twenty-four million feet, which can be sold, as far as there is a demand for it, for use in any part of the country. -- The aim of the Forest Service is thus in the first place to keep the annual cut of timber on each Forest within the amount that is annually produced. In the second place, we aim to distribute the amount cut every year, first, among the people living nearest to the Forest and most directly dependent upon it, and, second, after these have been provided for, among the people at large. -- Montana furnishes an excellent illustration of the workings of this principle. In the central portions of the state, a region of naturally limited timber supply and of tremendous mining activity, the entire supply of the National Forests will be reserved, absolutely, for local use. Nowhere, if possible, will more than the annual growth on each Forest be cut, and every stick that is cut will be used in the nearby mines or the growing towns connected with them. In western Montana, on

the other hand, we have vast stretches of dense forests with little mining and a comparatively little local use of timber for any purpose. On these forests, as the demand from the country at large becomes more and more active, the amount of timber produced annually can very largely be sold for distribution through the general market all over the United States.

The work and aims of the Forest Service, however, do not stop here. The property which we are managing in the interests of the people of the United States must not be allowed to rest at its present rate of production. It must be made, on the contrary, increasingly productive so that the dividends of the stockholders at large will steadily become greater. In other words, we must not rest satisfied with an annual production of fifty million feet. We must, if possible, make it sixty million feet, or seventy million feet, from the same number of acres, and this, in many cases, we can and will do. -- Anyone who travels through our western mountains is struck by the many areas of barren land scattered through the forests, areas which because of fires in the usual case, have been denuded of their original growth of trees and now are unproductive, waste land. There are many areas, too, where because of lack of moisture, the stand of timber is scattered, the ground not supporting nearly the number of trees or producing the amount of wood per acre that it might. Such areas, the Government forester will, as time goes on, convert into solid forests, by planting young trees. In so doing, we will increase steadily the acreage

which is actually producing timber, and, consequently, the annual production of wood and the amount which may be cut every year to supply the growing needs of the country. By systematic protection from fire, we will enable many areas which have hitherto been denuded to return to forest through natural reseeding, and so increase the annual interest in timber which the same capital in acres may be made to yield.

Outside of the actual forestry work, the men employed by "Uncle Sam" on the National Forest have many varied and interesting duties. There are trails to be built through the mountains in order to make them accessible to the people for recreation and to enable the rangers and guards to reach quickly the column of smoke discovered early some morning after a lightning storm that means the beginning of a forest fire; telephones must be built to connect the camps of the forest rangers so that the news of fires sighted from some lookout point can be spread readily and a force of men gathered quickly to extinguish it; cabins must be built in order to provide comfortable homes for these employees of "Uncle Sam" who spend their lives in the mountains. The enormous stock ranges included in the National Forests must be protected, improved in many cases by introducing better forage plants and allotted with care to the settlers and valley farmers who wish to bring their sheep and cattle up into the mountains for summer pasturage. Here again, the Government, acting as a board of directors for the people who own these mountain ranges, believes that it is wise to look into the

future. They aim to have these mountain stock ranges used just as fully as possible without injuring their future value or reducing their usefulness to the sheep and cattle men of the future. The number of sheep or cattle admitted to any particular section of the mountains is restricted to what the pasturage will actually support without cropping it so close or trampling it so hard that there will not be at least as good a growth the following year. The policy directing the use of the National Forest stock ranges is identical with that regulating the use of their timber, namely, to insure the permanence of this great natural source of wealth undiminished for all time to come. As in the case of the timber, we will use every year what is actually produced in that year, and without reducing the future productiveness of the range, which is our permanent capital and which we jealously guard as the property of the people.

In the management of the stock ranges, as in the distribution of the national timber, the Government believes that the local residents, the stockholders in the national corporation who live nearest to the National Forests, and are most directly dependent upon them for their means of living, should be given the first consideration. The sheep and cattle belonging to the local settlers up in the mountains or in the adjoining valleys are provided for first. If there is still pasturage to spare, the stock of the larger and more distant owners is admitted until the full quota which the range can support without injury, is made up. The essential principle

underlying the policy adopted by the Government for the administration of these great national holdings is that all of their resources - timber, stock, range, land, minerals and water - shall be put to their best and most productive use under the one invariable, stern condition that their present use must not be allowed in any way to injure their future usefulness.

It is of course impossible to put such a policy into effect without restricting the future expansion of certain of the larger interests which depend upon the use of the public domain, or even reducing in some cases their present use of the people's resources. These restrictions have been felt especially by the larger stock growers. There have been frequent cases where - in order to protect the National Forest ranges from such close grazing as would injure their future productiveness or to make room for the stock owned by small, near-by settlers, the government has been forced to reduce the number of stock which the larger sheep and cattle owners have hitherto ranged on the National Forests. It is not surprising that the interests directly affected have protested vigorously or that the Forest Service has been severely criticized for the action taken. It must be clearly borne in mind, however, that such restrictions have been imposed only where absolutely necessary for the permanent good of the greatest number of citizens. Except where the permanent

interests of the people as a whole are endangered, we aim to put every acre of the National Forests to its most profitable immediate use, and to encourage the legitimate development of every industry dependent upon them.

The land which is distinctly agricultural in character, like many of our meadows and river bottoms even in the high mountains, are open to settlement by homeseekers. We welcome the exploitation of minerals and the profitable use of the mountain streams in the National Forests for irrigation or for water power. In all of these ways our great national property should not only be made of direct value as a means of livelihood to many individual stockholders in the company, but by promoting industries and producing wealth, it will contribute to the prosperity of every one of the eighty-five million shareholders.

To me it is a wonderful and an inspiring thing that the American people has adopted this plan of the public ownership of these great national resources. It means that the people have taken into their own hands the safe guarding of the sources of their prosperity. The National Forests are the property of everyone of us as they will be the property of the coming generations. Their administration by the employees of the people is not for the present, but for all time, and its aim will be to promote, in the words of Sec'y Wilson, "the greatest good of the greatest number in the long run".